



Our Missouri Waters – Big River Watershed (HUC07040104)



Our Missouri Waters fact sheet

09/2013

The Big River Watershed is located in east-central Missouri and discharges into the Meramec River basin. The Big River has severe biological impairment due to nonpoint source pollution resulting from mining activities in the watershed.

The basin originates in Iron County and flows north through several counties to its confluence with the Meramec River. The watershed includes:

- Portions of Iron, St. Francois, Ste. Genevieve, Washington, Franklin and Jefferson counties.
- Towns of Bonne Terre, Byrnes Mill, Caledonia, DeSoto, Desloge, Hillsboro, Irondale, Leadington, Leadwood, Mineral Point, Park Hills and Potosi.
- 620,913 acres (955 square miles).
- Land use: 1 percent cropland, 18 percent grassland, 72 percent forest, 7 percent developed, less than 1 percent water] (Source USGS National Land Cover Database, 2006).
- Population: 98,252 (101.25 per square mile); Year 2010 Census data.

Major streams in the watershed area of Big River

Stream	(sq. Mi)	(acres)
• Mineral Fork	189	120,960
• Cedar Creek	79	50,666
• Terre Bleue Creek	67	42,755
• Flat River	53	33,920
• Mill Creek	52	33,080
• Heads Creek	30	19,440
• Dry Creek	30	18,930
• Belew Creek	26	16,620

Communities in the Big River Watershed

- St. Francois County: Leadwood, Desloge, Bonne Terre, Bismarck, Wortham, Frankclay, Park Hills, Leadington, Terre du Lac
- Washington County: Potosi, Caledonia, Irondale, Mineral Point
- Jefferson County: DeSoto, Hillsboro, Byrnes Mill, Cedar Hill, High Ridge, Scotsdale

Public Lands in the Big River Watershed

- Bonne Terre City Lake
- Bootleg Access
- Brown's Ford Access

Public Lands in the Big River Watershed (continued)

- Burford Mountain Conservation Area
- Hickory Canyons Natural Area
- Hughes Mountain Natural Area
- Kingston Access
- Leadwood Access
- Mammoth Access
- Mark Twain National Forest - Potosi District
- Merrill Horse Access
- Mineral Area College (Quarry Pond)
- Mineral Area College Range
- Missouri Mines State Historic Site
- Pea Ridge Conservation Area
- Potosi (Roger Bilderback Lake)
- St. Francois State Park
- St. Joe State Park
- Valley View Glades Natural Area
- Washington State Park
- Young Conservation Area

Public Water Supplies

- 77 public drinking water systems in watershed, majority rely on groundwater.
- 4 have source water protection plans: Irondale, St. Francois Co. PWSD #2, Mirasol Subdivision and Raintree Plantation.
- Surface water supplies: Jefferson County Public Water Supply District #2

Water Quality Monitoring

- Approximately 90 water quality sample data sites in Big River watershed in DNR's database.
- 2367 samples collected between November 1962 and September 2012.
- USGS has completed 449 individual water quality sampling events at 18 unique sites
- There are 106 stream teams that are from the watershed and/or have collected data from the watershed.

Nonpoint Source Pollution

Streams on the 2012 303(d) list of impaired streams include impairment for cadmium, zinc, lead, inorganic sediment, Biochemical Oxygen Demand, both volatile and non-volatile suspended solids, chlorophyll and total nitrogen. Impaired uses include Livestock and Wildlife Watering, Protection of Aquatic Life (Warm-Water Fishery), Human Health Protection (Fish Consumption).

Point Sources of Pollution

There are approximately 116 permitted point sources in the Big River Watershed. They include the following:

- 91 wastewater treatment facility discharges
- 18 Other land application sites.
- 7 Other discharge (industrial, car wash, etc)

2012 303(d) Impaired Waters in Big River Watershed

Stream	Pollutant	Impaired miles	Source	TMDL Scheduled*
Big River	Cadmium (S)	81.3	Old Lead Belt tailings	2014
Big River	Zinc (S)	81.3	Old Lead Belt tailings	2014
Coonville Creek	Lead	1.3	Source Unknown	2025
Eaton Br.	Cadmium (S)	1.2	Leadwood tailings pond	2014
Eaton Br.	Cadmium	1.2	Leadwood tailings pond	2014
Eaton Br.	Lead (S)	1.2	Leadwood tailings pond	2014
Eaton Br.	Zinc (S)	1.2	Leadwood tailings pond	2014
Eaton Br.	Zinc	1.2	Leadwood tailings pond	2014
Flat River Creek	Cadmium	10	Old Lead Belt tailings	2014
Koen Creek	Fishes Bioassessments	1	Source Unknown	2022
Salt Pine Creek	Aquatic Macroinvertebrate Bioassessments	1.2	Barite tailings pond	2022
Shaw Br.	Cadmium (S)	1.2	Federal tailings pond	2014
Tiff Creek	Fishes Bioassessments	2.1	Source Unknown	2022
Trib. Old Mines Creek	Sedimentation/Siltation (S)	1.5	Barite tailings pond	2014
Turkey Creek	Cadmium	2.4	Bonne Terre chat pile	2014
Turkey Creek	Lead	2.4	Bonne Terre chat pile	2014
Turkey Creek	Zinc	2.4	Bonne Terre chat pile	2014
Trib. To Flat River Creek	Zinc	0	Mill tailings (Aban.)	2014
Terre Du Lac Lakes	Chlorophyll-a	103	Terre du Lac subdivision	2016
Terre Du Lac Lakes	Total Nitrogen	103	Terre du Lac subdivision	2016

*TMDL schedule is subject to change

Approved Total Maximum Daily Loads

Stream	Pollutant	Approval Date	NPS contribution
Mississippi River	PCB	11/3/2006	Minor
Big River	Lead	3/24/2010	Major
Big River	Lead	3/24/2010	Major
Big River	NVSS	3/24/2010	Major
Shibboleth Br.	Inorganic Sediment	12/23/2010	Major
Shibboleth Br.	Lead, zinc, cadmium – dissolved and in sediment [these were not 303(d) listed]*	12/23/2010	Major
Pond Creek	Inorganic Sediment	12/23/2010	Major
Pond Creek	Lead, zinc, cadmium – dissolved and in sediment - [these were not 303(d) listed]*	12/23/2010	Major

Stream	Pollutant	Approval Date	NPS contribution
Flat River Creek	Lead	3/24/2010	Major
Flat River Creek	Zinc	3/24/2010	Major
Flat River Creek	NVSS	3/24/2010	Major
Shaw Br.	Lead	3/24/2010	Minor
Shaw Br.	NVSS	3/24/2010	Minor
Turkey Creek	BOD	1/13/2005	None
Turkey Creek	VSS	1/13/2005	None

*These metals were addressed in the Shibbleth Br. and Pond Cr. TMDLs, despite these pollutants not being listed at the time. Available data suggested that these pollutants were impairing the streams.

Department Studies in the Watershed

- <http://dnr.mo.gov/env/esp/docs/UpperBigRiverFinal.pdf>
2001-2002 At the request of the Missouri Department of Natural Resources (**MDNR**) Water Pollution Control Program (**WPCP**), the Environmental Services Program (**ESP**) Water Quality Monitoring Section (**WQMS**) conducted a macroinvertebrate bioassessment and fine sediment study of the upper Big River in Washington County.

Recreational Use Attainability Analyses (2005-2008)

<http://dnr.mo.gov/env/wpp/wqstandards/uaa/index.html>

- Buck Creek 1727 <http://dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/1727-complete-uaa-07.pdf>
- Dry Creek 3418 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/3418-dry-ck-uaa-092206.pdf>
- Heads Creek 2182 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2182-complete-uaa-07.pdf>
- Saline Creek 2190 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2190-complete-uaa-07.pdf>
- Sand Creek 3697 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/3697-sand-ck-uaa-092206.pdf>
- Cabanne Course 2132 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2132-complete-uaa-08.pdf>
- Flat River Creek 2168 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2168-complete-uaa-07.pdf>
- Goose Creek 1741 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/1741-complete-uaa-08.pdf>
- Koen Creek 2171 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2171-complete-uaa-08.pdf>
- Salem Creek 2174 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2174-complete-uaa-08.pdf>
- Three Hill Creek 2130 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2130-complete-uaa-07.pdf>
- Bates Creek 2103 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2103-complete-uaa-07.pdf>
- Dry Creek 2164 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2164-complete-uaa-08.pdf>

Recreational Use Attainability Analyses (2005-2008) (continued)

- Fountain Farm Branch 3657
<http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/3657-complete-uaa-07.pdf>
- Goose Creek 2153 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2153-complete-uaa-08.pdf>
- Mill Creek 2124 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2124-complete-uaa-08.pdf>
- Reid Creek 3410 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/3410-complete-uaa-07.pdf>
- Trib to Big River 2116 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/3410-complete-uaa-07.pdf>
- Trib to Shibboleth Creek 2121
<http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2121-complete-uaa-08.pdf>
- Trib to Mill Creek 2126 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2126-complete-uaa-07.pdf>
- Wallen Creek 2139 <http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/pdf/2139-complete-uaa-07.pdf>

USGS Gage Stations-Real Time Flow Data

- USGS Big River near Richwoods, MO 07018100
http://waterdata.usgs.gov/nwis/uv/?site_no=07018100&PARAMeter_cd=00065,00060,00062,72020
- USGS 07018500 Big River at Byrnesville, MO
http://waterdata.usgs.gov/nwis/uv/?site_no=07018500&PARAMeter_cd=00065,00060,00062,72020
- USGS 07017610 Big River below Bonne Terre, MO
http://waterdata.usgs.gov/nwis/uv/?site_no=07017610&PARAMeter_cd=00065,00060,00062,72020
- USGS 07017200 Big River at Irondale, MO
http://waterdata.usgs.gov/nwis/uv/?site_no=07017200&PARAMeter_cd=00065,00060,00062,72020

319 Projects in the Big River Watershed - previous 10 years

- Mini-Earth Day Symposium - 2004 to discuss stream and watershed management (\$5000)
- Mini-Belews Creek Watershed Management Plan Development - The \$5,000 in federal funds supported the Jefferson County Stormwater Program to identify the nine elements in a watershed management plan needed to protect water quality in the Belew Creek watershed. (2003-2008)
- St Louis Metro-Clean Water Education and Resources Project - (\$22,497 2003-2009) This project evaluated and selected the best materials on clean water issues, for use in grade school, middle school and high school curriculum.
- Upper Big River Corridor Ground Water Protection and Well Decommissioning - (\$411,812 2003 – 2010) This project focused primarily on groundwater and riparian corridor protection from livestock activity within St Francois, Washington and Iron counties. This area has a large number of mining exploration holes, which were drilled early in mining history and were not closed. These open pipes pose a significant risk to water quality since many of these are on agricultural lands and transport soil, nutrients and bacteria from animal waste to the groundwater aquifer, which supplies drinking

water to 40,000 residents. Some of the exploration pipes in low-lying areas flow water year round. Cattle use the watering holes created by the flowing pipes for drinking water. These areas become severely trampled and the runoff flows directly into the Big River and its tributaries. These open exploration pipes impact both surface and ground water in this watershed.

- Upper Big River Corridor Water Quality Project (2007-2013 \$880,000) - The project would address sediment, fecal bacteria from livestock, and excessive nutrients from agriculture in St. Francois County. The project would put in four miles of stream protection that will create a buffer for livestock and reduce fecal coliform and nutrient runoff.
- Upper Big River Water Quality Project Part 2 (2004-2012 \$70,000) - This project focuses primarily on groundwater and riparian corridor protection from livestock activity in St. Francois, Washington and Iron counties. (see description above)
- Jefferson Co Stormwater-Belews Creek Watershed Management Plan Implementation - (2009-2015 \$180,200) The Belews Creek Watershed project intends to improve the water quality in the watershed through the implementation of tasks identified in the accepted watershed management plan.

For More Information

For more information about Our Missouri Waters initiative and the Big River Watershed project, or to provide comments and suggestions about water resource issues in the Big River Watershed, contact the department's St. Louis Regional watershed coordinator, Tracy Haag, or the department's Southeast Regional watershed coordinator, Travis Abernathy.

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Or on the Web at dnr.mo.gov/omwi.htm

Also, check out the project **Facebook page** at **Our Missouri Waters Big River Watershed Initiative**.